# Position Description

## CSIRO Early Research Career (CERC) Postdoctoral Fellowship– CSOF4

The following information is for applicants

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| Advertised job title**:** | CSIRO Postdoctoral Fellowship in Printed Sensors |
| Job reference: | 61892 |
| Relocation assistance**:** | Will be provided to the successful candidate if required. |
| Applications are open to: | * All Candidates
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| Percentage of client focus - internal: | 70% |
| Percentage of client focus - external: | 30% |
| Reports to the: | Team Leader – Electrochemical Processing |
| Number of direct reports: | 0 |
| How to apply: | Please apply online at [jobs.csiro.au](https://jobs.csiro.au/) and enter the requisition number**.** Internal applicants please apply via ‘Jobs Central’ through the ‘People Hub’ icon Please do not email your application directly to Dr Rodopoulos. Applications received via this method will not be considered by the selection panel. |
| Contact details to discuss this position: | Dr Theo Rodopoulos via email: theo.rodopoulos@csiro.au or via phone: +61 3 9545 8713 |
| If you have difficulty applying please contact: | Call 1300 984 220 or email csiro.online@csiro.au between 8.30 am and 5 pm Australian east coast time. |

## Role Overview:

**CSIRO Early Research Career (CERC) Postdoctoral Fellowships** provide opportunities to scientists and engineers who have completed their doctorate and have less than three years relevant postdoctoral work experience. These fellowships aim to develop the next generation of future leaders of the innovation system through:

* A differentiated career development program to deliver capability excellence and breadth across all facets of the national innovation system.
* Research training via strategic research and development projects with a clear focus that will deliver real impact through science and engineering excellence;
* An innovative culture supporting the development and demonstration of original thinking and expertise leading to peer-recognition; and
* Opportunities to develop skills and experience in collaborative research teams to effectively work within national and global multi/transdisciplinary and multi-stakeholder environments.

CERC Postdoctoral Fellows **are appointed for three years or part time equivalent.**

CSIRO has developed a proprietary solid-state sensor and analytics technology, termed SENSEITM, which fills a gap in the sensor market. In addition to operating in extreme process environments this technology can allow continuous on-line monitoring of the most challenging industrial and environmental applications. The next phase in the development of this sensor system involves making it cheaper and easier to fabricate allowing for wider application in low-cost and high-volume applications.

The Electrochemical Processing team in CSIRO Mineral Resources is investigating recent advances in printing technologies such as screen and inkjet printing as a mechanism for mass producing low-cost printed electrodes to realise cheap and portable electrochemical sensors for real-time environmental monitoring. Printed electrochemical sensors have many advantages over other types of electrodes for continuous on-line monitoring applications including their low fabrication cost, simplicity, compactness and versatility, and the requirement of only very small sample volumes for analysis. Although a wide variety of materials can be printed, further advances in materials and electrode design are required to deliver reliable and robust printed electrodes and sensors for in-situ monitoring of environmentally important analytes.

The Postdoctoral Fellow will join CSIRO Mineral Resources and work within our Electrochemical Processing team and with our collaborators in CSIRO Manufacturing to deliver the next generation SENSEITM sensors. The successful candidate will work as part of a multi-disciplinary team comprised of electrochemists, synthetic chemists and engineers to help with project delivery. The Postdoctoral fellow will have multi-disciplinary skills (electrochemistry, synthetic chemistry and materials chemistry) to conduct cutting-edge research.

## Duties and Key Result Areas:

* Under the direction of senior research scientists, carry out innovative, impactful research of strategic importance to CSIRO that will, where possible, lead to novel and important scientific outcomes.
* Your primary responsibility is to work within the Electrochemical Processing Team and contribute to the development and fabrication of low-cost, flexible printed sensors. Tasks will include:
	+ Develop, synthesise and evaluate new materials and ink formulations for printed electrochemical sensors which allow the detection and monitoring of environmentally important analytes
	+ Design and print electrodes using various printing techniques including screen-printing and inkjet-printing
	+ Characterise the printed devices using electrochemical techniques and other suitable methods e.g. SEM-EDS, Raman spectroscopy and XRF
	+ Test and demonstrate the functioning devices for on-site and/or on-line monitoring of environmentally important analytes
* Work collaboratively with colleagues within the multi-disciplinary research team, the business unit and across CSIRO to deliver project objectives.
* Carry out tasks in a timely manner under limited direction in support of scientific research.
* Participate in project planning, experimental design, scheduling and completion of projects.
* Adapt and/or develop original experimental methods/equipment/software/concepts/ideas in support of existing and further research. Provide critical feedback on all aspects of the project in order to improve outcomes.
* Contribute to the development of innovative concepts and ideas for further research.
* Prepare conference papers and posters and present them at appropriate conferences and forums as agreed with your supervisor and project leader.
* Produce high quality scientific papers suitable for publication in high quality journals and contribute to the preparation of any patents that arise from the research.
* Undertake regular reviews of relevant literature and patents.
* Contribute to the effective functioning of the Electrochemical Processing Team and the project team and help deliver CSIRO’s organisational objectives and plans.
* Communicate effectively and respectfully with all staff, clients and suppliers in the interests of good business practice, collaboration and enhancement of CSIRO’s reputation.
* Adhere to the spirit and practice of CSIRO’s Code of Conduct, Health, Safety and Environment plans and policies, Diversity initiatives and Zero Harm goals
* Other duties as directed.

**The CERC Postdoctoral Fellow learning and development program**is developed between the CERC Postdoctoral Fellow and their CSIRO supervisor. The program will focus on enhancing the Fellows’ capabilities to the level expected of an independent researcher and will include on-the-job and course-based development encompassing:

* Discipline-specific techniques and protocols
* Professional growth
* Project management
* Communication and influencing skills
* Working and collaborating with others

<http://www.csiro.au/en/Careers/Student-and-graduate-programs/Postdoctoral-fellowships>

## CSIRO Competencies:

1. **Teamwork and Collaboration: Cooperates with others to achieve organisational objectives and may share team resources in order to do this. Collaborates with other teams as well as industry colleagues.**
2. **Influence and Communication: Uses knowledge of other party's priorities and adapts presentations or discussions to appeal to the interests and level of the audience. Anticipates and prepares for others reactions.**
3. **Resource Management/Leadership: Allocates activities, directs tasks and manages resources to meet objectives. Provides coaching and on the job training, recognises and supports staff achievements and fosters open communication in the team.**
4. **Judgement and Problem Solving:** Investigates underlying issues of complex and ill-defined problems and develops appropriate response by adapting/creating and testing alternative solutions.
5. **Independence: Recognise and makes immediate changes to improve performance (faster, better, lower cost, more efficiently, better quality, improved client satisfaction).**
6. **Adaptability:** Copes with ambiguity or situations that lack clarity. Adapts readily to changing circumstances and new responsibilities (which may include activities outside own preferences) in the interests of achieving team objectives. Recognises the need for and undertakes personal development as a result of changes.

## Essential Criteria:

*Under CSIRO policy only those who meet all essential criteria can be appointed.*

1. A doctorate (or will shortly satisfy the requirements of a PhD) in a relevant discipline area, such as electrochemistry, electroanalytical chemistry, electrochemical engineering, and material chemistry.

***Please note:*** *To be eligible for this role you must have* ***no more than 3 years (or part time equivalent)*** *of postdoctoral research experience.*

1. Sound knowledge of electrochemical science, including its practice in a research environment and applications such as sensor technologies.
2. A good working knowledge of material requirements for electrochemical applications.
3. Sound knowledge and research experience in modern laboratory methodologies, including materials synthesis and characterization (e.g. SEM, XRD, synchrotron-based measurements and spectroscopy).
4. Demonstrated ability to conduct challenging experiments, solve complex experimental problems and cope with ambiguity or situations that lack clarity.
5. **The ability to work effectively as part of a multi-disciplinary, regionally dispersed research team, plus the motivation and discipline to carry out autonomous research while contributing to overall team performance.**
6. Demonstrated ability to analyse information and make independent, correct and timely decisions related to a defined element of the work of the project team
7. A record of science innovation and creativity, plus the ability and willingness to incorporate novel ideas and approaches into scientific investigations. Track record of adapting, creating and testing alternative solutions (e.g. transformation and application of materials).
8. Evidence of strong oral and written communication skills, including the ability to publish the results of scientific research in scientific journals.
9. Demonstrated ability to seek and consider the ideas and opinions of others from within and outside the team to help form decisions, plans or actions.
10. Demonstrated ability to recognise and make immediate changes to improve performance.

## Desirable Criteria:

1. Previous experience with sensor development and testing.
2. Knowledge of printing technologies and inks relevant for sensor applications.
3. Experience with or knowledge of the commercialization of technology.

To be appointed as a CERC Postdoctoral Fellow within CSIRO, candidates are required to have **submitted** their PhD at the time of commencement, as a minimum requirement, if PhD conferment has not been obtained. If a candidate has submitted, but their PhD has not yet been formally attained, the starting salary will be CSOF4-1 *(AU$83,687).* Upon CSIRO receiving written confirmation that the PhD has been awarded (within a six month period from commencement date), the salary will be increased to the negotiated level and the difference will be back-paid to the Officer’s start date.

## Special Requirements:

Appointment to this role may be subject to conditions including security/national police/medical/character clearance requirements. Applicants who are not Australian Citizens or Permanent Residents may be required to undergo additional security clearances, which may include medical examinations and an international standardised test of English language proficiency (i.e. IELTS test).- <https://ielts.com.au/>

**Our value proposition**

We want CERC Postdoc Fellows to join our world class science, engineering and digital teams to solve big, complex problems that make a real difference to the future of Australia and the world.

You'll get to work with some of the most talented minds in their fields, not just in Australia, but in the world. At CSIRO, we spark off each other, learn from each other, trust each other and collaborate closely to achieve more than we could individually.

CSIRO Early Research Career (CERC) Postdoctoral Fellow Experience Employee Value Proposition (EVP). Find out more! <https://www.csiro.au/en/careers/postdoctoral-fellowships>

## About CSIRO:

At CSIRO we solve the greatest challenges through innovative science and technology. See more [online](http://www.csiro.au/)!

Find out more about CSIRO [Mineral Resources](https://www.csiro.au/en/Research/MRF)